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Abstract

In Japan, where the responsibility for child rearing lies mostly with women, mothers experience tighter time constraints and increased demands for parenting when their children enter elementary school. We employ unique data containing detailed information about mothers' employment and emotional distress to first examine the existence of first-grade shock, which has been recognized by the media and government. Our empirical investigation shows that the share of mothers' employment as part-time workers increases when their children are in the first grade but returns to the previous level the following year. We also show consistent evidence from women's perceptions of work-life conflicts, equal share of housework, and emotional distress, as well as evidence regarding their concerns about their children's lives, evidence which supports the existence of first-grade shock.

Key words: ***first-grade shock, gendered division of labor, maternal employment***

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1. Introduction

The phenomenon of “first-grade shock” first appeared in a Japanese magazine named Asahi Shimbun weekly AERA[1] in the October 17 issue of 2005 describing the adversity of mothers who find it difficult to balance child rearing and career once their children enter first grade. The term started to receive public attention in 2014, when Prime Minister Shinzo Abe mentioned it in his policy speech (Nikkei 2014a).[2] In his speech, Prime Minister Abe proclaimed “an aim for a society where women can play an active role” and promised that the government would accelerate a comprehensive support plan for after-school programs and lower the "wall of the first grade". First-grade shock also appeared in the “White Paper on declining birth rate, 2015” written by the Cabinet Office and Amano (2015) and was pointed to as one of major reasons behind the stagnating participation of married women in the labor force.

The definition of first-grade shock differs among governments, non-profit

[1] AERA stands for “Asahi Shimbun Extra Research and Analysis”.

[2] Nikkei. 2014a. “The Wakeup Call for Japan’s Potential” Prime Minister's Message. *Japan Economic Journal.* Sept. 29th. 2004

https://www.nikkei.com/article/DGXLZO77681430Z20C14A9EAF000/ (in Japanese)

organizations (NPOs), and the media. According to the Cabinet Office (2015), "first-grade shock" implies a situation where mothers involuntarily experience career interruption due to an increased childcare burden when their children enter primary school. Other NPOs, pressure groups, and media use the term as a more comprehensive concept implying work-life conflict of mothers with school-aged children. Japan's primary schools demand a considerable amount of responsibility and tasks on behalf of parents (mostly mothers), thereby exacerbating a mother's physical and mental burden (Yomiuri 2015).[3]

In this paper, we empirically show the existence of first-grade shock in Japan for the first time in the literature. We benefit from unique data from Japan containing detailed information about Japanese mothers' employment emotional distress, perceived work-life conflict, and concerns about their own children. We first show that mothers' employment as part-time workers increases during the year their youngest children start first grade in elementary school. However, increased employment also coincides with an increase in the number of mothers with depression. Mothers also report a decreased

[3] Yomiuri. 2015. "Ryoritsu habamu 'shoichi no kabe'." ("First-grade shock" to prevent work-life balance.) *YOMIURI ONLINE*. May 26th. https://www.yomiuri.co.jp/feature/matome/20150527-OYT8T50035.html (in Japanese)

amount of housework shared by their husbands and increased work-life conflict.

Next, we observe that mothers' employment level decreases to the level when their children were in preschool. At the same time, emotional distress and a mother's perception of work-life conflict also return to preschool levels.

Our results indicate that mothers try to re-enter labor market once their children enter elementary school. However, they are soon faced with work-life conflict caused by the increased burden of child rearing and lack of support from their husbands and society. The work-life conflict experienced by mothers increases the probability of emotional depression by 7.64% point, forcing them to eventually quit their job the following year. We also provide suggestive evidence that part of a mother's burden stems from concerns about her children's educational achievement and adaptation to school life.

Our paper is in line with the literature showing the importance of parental involvement in children's schooling and educational attainment. Dudley-Marling (2001) and Holloway (2006) analyzed cases in the United States, Canada, and Japan and showed that mothers bear an emotional burden when their children show poor performance in school. Hutchison (2012) analyzed videotaped interactions between mothers and their children and claimed that support for children's homework largely falls on mothers. Maume et al (2010) studied dual-earner working class couples and reported that sleep

deficits are only found among mothers who struggle to meet their daily employment and family obligations. Offer (2016) North (2009) also reported that the burden of family work in Japan falls disproportionately on women, even in dual-income families.

There has been a growing literature on the impact of subsidized childcare and women's labor market participation. Some studies found that a subsidized kindergarten has no impact on maternal labor supply (Cascio, 2009; Havnes and Mogstad, 2011; Asai et al., 2015). However, according to other studies, subsidized childcare has a large positive impact on maternal labor supply, especially when combined with full-time public kindergarten (Lefebvre and Merrigan, 2008; Haeck et al., 2015; Givord and Marbot, 2015; Nollenberger and Rodriguez-Planas, 2015). Our paper contributes to the literature by showing that after-school childcare system, as well as a subsidy for preschool childcare, is important to maternal labor supply and a mother's work-life conflict.

This paper is organized as follows. In section 2, we provide a detailed description of the childcare system and women's labor market participation in Japan. In section 3, we introduce our data and empirical strategy. In section 4, we present our empirical results and provide an interpretation. We conclude in section 5.

2. First-grade shock and the childcare system in Japan

2.1. Nursery school vs. after-school care programs in Japan

As more mothers continue to work, the lack of nursery care facilities has become an urgent social problem in Japan. However, when tackling with this problem, the government has mainly focused on preschool children and left aside school children. As a result, a mother's time constraints become tighter when children enter elementary school.

The after-school childcare program, however, has not received enough attention from the government. According to the Ministry of Health, Labor, and Welfare, the number of school children using after-school care programs in 2007 was 794,922. This number steadily increased and reached 1,093,185 in 2017. However, it has been pointed out by the media that the shortage of after-school care programs is the major source of first-grade shock in Japan (Nikkei 2014b)[4].

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[4] Nikkei. 2014b. "'Shoichinokabe' tte nani? Syugakugomo kodomono azukesaki fusoku." (What is 'First-grade shock'? Lack of afterschool programs for children after enrollment of school.) *Japan Economic Journal.* Aug. 25th. https://www.nikkei.com/article/DGKDZO76111280V20C14A8EAC000/ (in Japanese)

In 2007, only 62.2% of children who graduated from nursery school could join after-school childcare programs (Social Security Council 2008). Nikkei (2018[5]) reported that some school children, faced with a shortage of after-school care programs, have no choice but to attend preschool nursery facilities. After-school childcare facilities often close quite early, providing insufficient support for working mothers. In 2016, approximately 25% of facilities closed before 6:00 p.m., and only 7.3% were open after 7:00 p.m. on weekdays (Ministry of Health, Labor, and Welfare 2016). The locations of after-school childcare facilities are also not convenient for preschool nursery schools. Approximately 53.7% of facilities are located on school premises, which are usually far from train stations, thus increasing female workers' time constraints compared to preschool years.

2.2. Women's labor force participation in Japan

<Figure 1 to be Inserted Here>

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[5] Nikkei. 2018. "Shogakusei Hoikuenni 'Tadaima' Taikijido dokode sugosu." (Elementary school students saying "I'm home" at the afterschool nursery. Where to stay for school children listed on waiting.) *Japan Economic Journal*. Jan. 16th. https://www.nikkei.com/article/DGKKZO25732870W8A110C1KNTP00/ (in Japanese)

Figure1 shows women's labor force participation rates by age group from 1975 to 2013 in Japan (Cabinet Office 2014). It shows a clear M-shaped curve in 1975, indicating that Japanese women in their late 20s and 30s left the labor force due to childcare burdens and re-entered it when they reached their 40s. The M-shaped curve softens into a gentle curve in 2013. The overall level of labor force participation also increased over four decades. In 1975, women in their early 20s show the highest level of labor force participation rate, reaching 66.2. In 2014, the highest level of labor force participation is among women in their late 20s, increasing to 73.

<Figure 2 to be Inserted Here>

Figure 2 shows the trends of female labor force participation rates by age group and marital status in 1975, 1995, and 2013. Though the overall level of workforce participation in each group increased over time, a significant gap between married and single women remains, even in 2013. In 1975, single women in their early 30s count for approximately 80% of the labor force participation rate, while that of married women is approximately 40%. In 2013, 90% of single women in their early 30s participated in the labor force, while only 57.9% of married women remained in the labor force. The gap decreased from 49% point to 32.4% point during four decades, implying very little improvement in the impact of having children on women's labor supply.

3. Data and Empirical Specifications

3.1. Data and Descriptive Statistics

We utilize the National Survey of Households with Children (*Kosodate Setai Zenkoku Chōsa*) （JILPT 2013, JILPT 2015）conducted in November of 2012 and 2014 by the Japan Institute for Labor Policy and Training. The survey is nationally representative and designed using a two-stage clustered sampling with stratification based on basic resident registry. Interviewers visited each respondent's residence and then submitted a completed questionnaire according to a prespecified schedule to ensure accuracy of data.

They survey contains information about both parents and their children under 18. The data are unique, as they providing detailed and comprehensive information on mothers, such as depression index, their own evaluation of work-life conflict, housework share, and their concerns about their children's educational attainment, behavioral issues, and school difficulties. The data also provide detailed information about parents' employment, work schedule, attained education, and proximity to their own parents and in-laws. We restrict our sample to mothers with children aged three to eleven to identify first-grade shock.

<Table 1 to be Inserted Here>

Table 1 shows that 64.9% of mothers with preschool children work outside the home, and 31.7% of all mothers work as part-timers in the case of the female workers with preschool children. On the other hand, 76.5% of females work outside the home and 41.7% are part-timers in the case of mothers with elementary school children. This shows that mothers with elementary school children tend to work more than mothers with preschool children; however, most of the time they are part-time workers. In both cases, less than 15% of mothers work in irregular schedules. In our data, 38.5% of nonworking mothers reported that a conflict in working hours is the main reason for not working.

The share of mothers who reported exercising strict discipline is higher among those with elementary school children (51.9%) than those with preschool children (46.6%). Mothers with elementary school children are more concerned about children's characteristics and habits, educational achievement, and the possibility of bullying.

Mothers with elementary school children are also more likely to report that they are too tired to do housework (55.3%) and face long working hours (40.3%) compared to mothers with preschool children (45.7% and 34.6%). When we evaluate the level of emotional distress using the CES-D scale, 10.1% of mothers with elementary school children experienced depression, as did 7.7% of mothers with preschool children.

Mothers with elementary school children also reported that the share of housework done by the husband amounts to only 0.8%. Their perception of equal housework sharing is very low compared to mothers with preschool children (28.9%).

We also have detailed demographics on mothers: their age, the sex of their first and their youngest children, education, and their husband's wage. The data also provide information about how much support they get from their parents (in law). The share of mothers who receive childcare support from parents decreases from 53.9% when they have preschool children to 43.8% when they have elementary school children. The share of mothers who receive financial support from their parents also slightly declines from 19.7% to 17.6%. As these supports may affect our outcome variables, such as work-life conflict, emotional distress, and concerns about children, we later control all these variables in our estimation.

3.2. Empirical Specifications

We aim to examine how first-grade shock affected a mother's employment, her own evaluation of work-life balance, and her emotional burden in terms of parenting. There are two major channels whereby children's entrance into the first grade would affect their mothers: tightened time constraints and increased demand for parenting. The

elementary school day ends earlier than the nursery school day in Japan and this restricts a mother's flexibility in time use. A huge demand for after-school care programs also indirectly supports a mother's time constraint. In addition, elementary school requires mothers to support their children's homework, educational attainments and appropriate behavior in school.

To discover whether mothers experience a sudden jump in their employment, we examine their emotional burden when their child enters elementary school. To estimate this first-grade shock, we employ following framework,

$$Y_{ijt} = \beta_0 + \beta_1 First_{ijt} + \beta_2 Cohort_j + \beta_3 Year_t + \beta_4 Controls_{ijt} + \varepsilon_{ijt} \qquad (1)$$

where Y_{ijt} indicates the outcome variable of mother "i" with children born in year "j" in survey year "t". $First_{ijt}$ is an indicator of whether a mother's youngest (or eldest) children born in year "j" passed the first grade in survey year "t". The coefficient β_1 captures whether mother's labor market participation and work-life balance indicators show a structural break around their children's entrance into elementary school. $Cohort_j$ is included to control for any common characteristics or legal system shared among children born in the same year, while $Year_t$ picks up any time trends affecting labor

market environment for mothers in each survey year. $Controls_{ijt}$ is a set of variables that includes characteristics of each mother, her children, and her husband.

To further examine the persistence of first-grade shock, we utilize the following framework, which is extended from equation (1),

$$Y_{ijt} = \beta_0 + \sum_{k=1}^{6} \beta_k Grade_{ijt}^{k} + \gamma_1 Cohort_j + \gamma_2 Year_t + \delta Controls_{ijt} + \varepsilon_{ijt} \qquad (2)$$

where $Grade_{ijt}^{k}$, is an indicator of whether the children of mother "i" born in year "j" are in $Grade^k$ in year t. β_k shows how women's outcomes change by children becoming jth graders to see how the results are changed. This framework allows us to examine whether first-grade shock has any persistent component for several years.

The set of control variables in equations (1) and (2) includes sex of child, mother's age, mother's years of education, and husband's wage. We also control for several variables, for example whether they receive private support from their own parents or parents-in-law. Such variables include indicators as to whether they are living close to parents (or parents-in-law), have private childcare support, and financial support. For precise definitions and detailed explanations, please refer to Table A in the Appendix.

4. Results and Interpretation

4.1. First-Grade Shock and a Mother's Employment

<Table 2 to be Inserted Here>

In 5.1, we examine how children entering elementary school affects a mother's employment. Table 2 shows whether mothers are more likely to be employed once their children enter the first grade. Regressions (1)-(3) in Panel A examine the impact of the first child entering first grade, while regressions (4)-(6) examine the impact of the youngest child entering first grade. Regression results show that school entrance of the first child has no impact on a mother's employment when we control for husband's wage, living arrangement and other support from their own parents. However, when we examine the impact of the youngest child entering first grade, we find a positive and significant impact on a mother's employment. Regressions (4)-(6) in Panel A show that a mothers' increase in employment ranges from 26.5% point to 35.9% point once her youngest children enter elementary school. This is consistent with the common observation that mothers who left the workforce for childbirth tend to re-enter the labor market once the children enter a formal school. In addition, our results show that a return to the work force can be observed only among women with completed fertility.

In Panel B, we explored first-grade shock and mother employment type: working

as a part-time worker and working with an irregular work schedule among all mothers. In these regressions, we examined only the impact of first-grade shock in the case of the youngest child. Regressions (1)-(3) in Panel B show that the impact of first-grade shock on women's employment as part-time workers ranges from 24.4% point to 29.5% point. This implies that most women who re-enter the labor force return as part-time workers. However, regressions (4)-(6) show that they do not return as workers with irregular work schedules.

<Table 3 to be Inserted Here>

In Table 3, we investigated whether first-grade shock is persistent throughout while the child is in elementary school. In Panel A, regressions (1)-(3) confirm our previous finding that women do not re-enter the labor market when their first child enters elementary school. Regressions (4)-(6) show the case of a youngest child entering first grade. Estimated coefficients show that women's labor market participation significantly increases from 17.8% to 23.2% point in the first year. However, temporarily increased labor market participation becomes statistically no different from that during the preschool period. The results are consistent when we examine the type of work in Panel B. Women re-enter the labor market as part-time workers with regular work schedules only during the year of the first grade. The results also suggest the possibility that

women's attitude toward work and traditional division of labor changed when they realized of incompatibility between women's career and child-rearing obligations suggested by Zhou (2017).

4.2. First-Grade Shock and a Mother's Emotional Burden

In this subsection, we examined whether first-grade shock affects a mother's emotional burden measured by the depression index. The depression index used for this survey is from The Centre for Epidemiologic Studies Depression Scale (CES-D Scale), which was developed for use in studies of depression in the general population. The relevant questionnaire questions were selected from a pool of items from previously validated depression scales (Radloff 1977). Scores range from 0 to 60, and the higher the score, the greater the depression. When the score exceeds 16, the individual is regarded as having clinical depression. Out of 20 sub-questions developed by Radloff (1977), JILPT surveyed 7 questions translated into Japanese. Next, these items were graded depending on frequency, with a higher score implying a higher level of depression. We choose a cut-off point of 10, and a range from 0 to 21, to construct the depression binary indicator employed in Zhou 2016, which is rather strict compared to Radloff's cut-off point of 16 out of 60.

<Table 4 to be Inserted Here>

Table 4 shows whether mothers are likely to experience emotional distress once their children enter elementary school. We found a significant and sizable impact. Regression (1) shows that mothers are 11.8% point more likely to experience emotional distress once their child starts first grade. The impact only moderately declines when we control for their husband's wage, living arrangement, and other support from their own parents.

In the lower panel, we examine potential sources of increased distress: husband's share of housework, tiredness, and work-life conflict. These indicators are subjective answers reported by respondents reflecting their perception. For example, one question asked, "How much does your husband share housework, including childcare? Please write down from 0 to 10, where 0 implies the husband does nothing and 10 implies, he does all the work." We then calculated normalized scores by subtracting each score by its average and dividing it by standard deviation. Regression (1) demonstrates that husband's share of housework declines by 0.633 standard deviation once their youngest children enters the first grade. The coefficient remains significant when we control for husband's wage, living arrangement and other support from their own parents.

We also tested other indicators of work-life conflict in regressions (3)-(6) in the

lower panel. The results consistently imply that mothers start to feel the heavy burden of doing both housework and work at the same time. They are 25.5% point more likely to report that they are too tired to do housework (regression 4) and 19.6% point more likely report that their working time is too long to do housework (regression 6). All these results indicate that mothers are under significant time constraints and carry the emotional burden of balancing housework and career at the same time. First-grade shock implies that mothers start to return to work; however, it also implies the considerable work-life conflict these mothers experience.

<Table 5 to be Inserted Here>

Table 5 examined the persistence of first-grade shock on depression and work-life conflicts previously examined in Table 4. Depression increases by 10.5% point during the year of youngest child enters first grade; however, it remains statistically insignificant for the upper grades. This result is consistent with other subjective outcome variables we test in regressions (2)-(4). Regression (2) shows that mothers during the first-grade year are more likely to report that their husband's share of housework significantly declined. However, we cannot see such a perception persisting in later years. The results are mostly similar to and consistent with cases of tiredness and reports of work-life conflict.

4.3. A Mother's Concerns about Children

Can concern about children's achievement in school be a major driving force in increasing the work-life conflict and emotional burden of mothers? In Japan, the role of parents and home education has been strongly emphasized as a policy since the late 1990s. In 2006, the parents' duties in the children's lives were explicitly described in Basic Education Law Article 10[6]. Honda (2008) argues that Japanese mothers are under an increasing burden and responsibility for family education and various requests from the school. In Table 6 we further examine a mother's discipline and time use with children and her various concerns about her children's achievements.

<Table 6 to be Inserted Here>

In Table 6, we constructed four indicator variables regarding whether mothers reported that they are being strict, worrying about children's personality, educational achievement, and possibility of being bullied in school. Regressions (1) and (2) show whether mothers increase their level of discipline once children enter school in the case

[6] Article 10 in 2006 clearly mentions the duty of parents: "Parents and other guardians have the primary responsibility for educating their children and are required to acquire the necessary habits for living and to foster autonomy and develop a harmonious mind and body."

of their first child and youngest child, respectively. Regression (1) shows that mothers increase their level of discipline when their first child enters school, but not in case of younger ones. Regressions (3) and (4) provide us with similar information: mothers are worried about their children's personality or habits during the first-grade year but not in other years. In addition, they do not show such an increase in concern in the case of the youngest child.

Regressions (3) and (4) show that concern about educational achievement significantly increases when children enter the 6^{th} grade in elementary school, rather than the first grade. Regressions (7) and (8) show that a mother's concern about children being bullied in school significantly increases by 6.16% point and 6.74% point in the case of first the child and youngest child, respectively.

Our empirical evidence in this subsection shows that part of a mother's increased distress is driven by a concern for her children's educational achievement and behavioral issues in school. Estimation results also imply that mothers with no prior experience in parenting may bear a more severe burden as a result of first-grade shock.

5. Conclusion

In this paper, we examined the existence of first-grade shock, whereby mothers

are under a higher level of pressure due to work-life conflict once their children enter elementary school. We employed a difference-in-differences strategy to capture the first-grade effect, controlling for a mother's characteristics and for available informal childcare from grandparents.

We found that mothers re-enter the labor market as part-time workers in the year their youngest child enters elementary school. However, they also experience difficulties in obtaining support from husbands and in managing work-life conflict. Our empirical exercise further shows that mothers' increased labor market participation during the first-grade year does not last. Mothers' labor market participation rates drop to a level insignificantly different from that of the preschool period. Correspondingly, their reported difficulty in work-life balance also declines to the preschool level.

We examined a mother's level of distress and perceived work-life conflict. Empirical evidence shows the clear existence of an increase in a mother's emotional burden when her child is in the first year in school. We further explored mothers' concerns about their children's various aspects. We found evidence to suggest that mothers' concern with their children's behavior and achievement in school could partly be the source of their emotional burden.

Our empirical evidence provides strong and consistent evidence of first-grade

shock in Japan. The wall of first-grade shock and its emotional burden is serious enough to discourage women's labor market participation in later years. To prevent a mother's career interruption, this paper calls for immediate policies to attenuate first-grade shock. After-school childcare programs can loosen the tight time constraints mothers face and support their work-life balance. Mothers with no previous child rearing experience would experience less concern if they received proper mentoring or guidance regarding their children's first year. Lastly, yet importantly, child rearing and housework burdens should be equally distributed within the family.

References

AERA. 2005. “Hatarakuhahawo habamu “Sho1 no kabe” Hoikuen mo Jitankinnmu mo nakunari.” (“First grade shock" to prevent working mother, No nursery school or short-time work) *Asahi Shimbun weekly AERA.* vol.10.17. Asahisinbun. (in Japanese)

Amano, Kanako. 2015. “”Hokagono ibasyo” no yukue. (1)-Gakudohoiku riyo saisinjyokyo karano kosatsu.” (“The whereabouts of "Whereabouts after school" (1) - Consideration from the latest situation of using afterschool childcare programs”) Kenkyuin no me. NLI Research Institute. Nov. 30.

https://www.nli-research.co.jp/report/detail/id=51525?site=nli (in Japanese)

Asai, Yukiko, Ryo Kambayashi, and Shintaro Yamaguchi. 2015. “Childcare availability, household structure, and maternal employment.” *Journal of the Japanese and International Economies*. Vol.38, pp.172-192.

Cabinet office. 2014. *Danjyo kyodosankaku hakusyo Heisei 26 nendoban. (White paper on Gender equality in 2014).*

http://www.gender.go.jp/about_danjo/whitepaper/h26/zentai/index.html (in Japanese)

Cabinet office. 2015. *Heisei 27 nendoban Syosikasyakaitaisaku Hakusyo. (White paper on measures against declining birthrate in2015).*

http://www8.cao.go.jp/shoushi/shoushika/whitepaper/measures/w-2015/27webhonpen/index.html (in Japanese)

Cascio, Elizabeth U. 2009. "Maternal Labor Supply and the Introduction of Kindergartens into American Public Schools." *The Journal of Human Resources*, Vol.44, No.1, pp.140-170.

Dudley-Marling, Curt. 2001. "School Trouble: A mother's burden." *Gender and Education*. Vol. 13:2, pp.183-197.

Givord, Pauline and Claire Marbot. 2015. "Does the cost of child care affect female labor market participation? An evaluation of a French reform of childcare subsidies." *Labour Economics*. Vol.36, pp. 99-111

Haeck, Catherine, Pierre Lefebvre, and Philip Merrigan. 2015. "Canadian evidence on

ten years of universal preschool policies: The good and the bad." *Labour Economics*. Vol.36, pp. 137-157.

Havnes, Tarjel and Magne Mogstad. 2011. "Money for nothing? Universal child care and maternal employment." *Journal of Public Economics*. Vol.95, Issues 11-12, pp. 1455-1465.

Holloway, Susan D., Sawako Suzuki, Yoko Yamamoto, and Jessica Dalesandro Mindnich. 2006. "Relation of Maternal Role Concepts to Parenting, Employment Choices, and Life Satisfaction Among Japanese Women." *Sex Roles*, Vol.54, No2. 3/4 February. pp.235-249

Honda, Yuki. 2008.*"Kateikyoiku" no airo-Kosodateni kyohaku sareru hahaoyatachi. (A bottleneck of "home education"- Mothers threatened by child rearing)* Keiso shobo. (in Japanese)

Hutchison, Kirsten. 2012. "A labour of love: mothers, emotional capital and homework." *Gender and Education*. Vol.24:2, pp.195-212.

JILPT. 2013. *Kodomonoirusetai no seikatujyokyo oyobi hogosya no syuro ni kansuru cyousa, 2012.* (*National Survey of Households with Children in 2012.*) JILPT Survey series. No. 109. The Japan Institute for Labour Policy and Training. (in Jaoanese)

JILPT. 2015. *Kodomonoirusetai no seikatujyokyo oyobi hogosya no syuro ni kansuru cyousa 2014.* (*National Survey of Households with Children in 2014.*) JILPT Survey series. No. 145. The Japan Institute for Labour Policy and Training. (in Japanese)

Lefebvre, Pierre and Philip Merrigan. 2008. "Child-Care Policy and the Labor Supply of Mothers with Young Children: A Natural Experiment from Canada." *Journal of Labor Economics*. Vol.26, No.3, pp. 519-548

Maume, David J., Rachel A. Sebastian, and Anthony R. Bardo. 2010. "Gender, Work-Family Responsibilities, and Sleep." *Gender and Society*. Vol. 24, 6: pp. 746-768.

Ministry of Health, Labour, and Welfare. 2006. "Zenkoku Taikijido mappu (Heisei 18 nen 4gatsu 1nichi genzai)." (National map of the listed child as of April 1, 2006). https://www.mhlw.go.jp/topics/2006/09/tp0915-1d.html (in Japanses)

Ministry of Health, Labour, and Welfare. 2016. “Heisei 28 nendo Houkagojido kenzenikusei jigyo (Hokagogakudo Kurabu) jisshi jyokyo.” (Implementation status of afterschool child health development project (afterschool childcare program) in 2016.) https://www.mhlw.go.jp/file/04-Houdouhappyou-11906000-Koyoukintoujidoukateikyoku-Ikuseikankyouka/0000107411_1.pdf (in Japanese)

Ministry of Health, Labour and Welfare 2017a. “Hoiubunya no Genjyo to Torikumi ni tuite” (On the Present Condition and Efforts in Nursery Care).
“”http://www8.cao.go.jp/kisei-kaikaku/suishin/meeting/wg/hoiku/20170922/170922hoiku02.pdf (in Japanese)

Ministry of Health, Labour and Welfare 2017b. “Hoikusyotou Kanrenjyokyo Torimatome (Heisei 29nen 4gatsu 1niti).” (Summery of Daycare center etc. and related situation April First, 2017.)
https://www.mhlw.go.jp/stf/houdou/0000176137.html (in Japanese)

Nikkei. 2014a.””Nihonni nemuru kanosei kaika” Syusyo syosinhyomei enzetsu.” (“The

Wakeup Call for Japan's Potential") Prime Minister's Message.) *Japan Economic Journal*, Sept. 29th.

https://www.nikkei.com/article/DGXLZO77681430Z20C14A9EAF000/ (in Japanese)

Nikkei. 2014b."" Shoichinokabe" tte nani? Syugakugomo kodomono azukesaki fusoku." ("What is the "First grade shock"? Lack of after-school program for children after enrollment of school.) *Japan Economic Journal.* Aug. 25th.

https://www.nikkei.com/article/DGKDZO76111280V20C14A8EAC000/ (in Japanese)

Nikkei. 2018. "Shogakusei Hoikuenni"Tadaima"Taikijido dokode sugosu." (Elementary school students saying,"I'm home" at the afterschool nursery. Where to stay for school children listed on waiting.) *Japan Economic Journal.* Jan. 16th.

https://www.nikkei.com/article/DGKKZO25732870W8A110C1KNTP00/(in Japanese)

Nollenberger, Natalia and Nùria Rodrìguez-Planas. 2015. "Full-time universal childcare in a context of low maternal employment: Quasi-experimental evidence from Spain."

Labour Economics. Vol.36, pp.124-136

North, Scott. 2009. “Negotiating What’s ‘Natural’: Persistent Domestic Gender Role Inequality in Japan.*” Social Science Japan Journal*. Vol.12.(1). pp. 23-44

Olivetti, Claudia and Barbara Petrongolo. 2017. “The Economic Consequences of Family Policies: Lessons from a Century of Legislation in High-Income Countries.” *Journal of Economic Perspectives*. Vol. 31, No.1, pp.205-230

Radloff, Lenore Sawyer. 1977. “The CES-D Scale: A Self-Report Depression Scale for Research in the General Population.” *Applied Psychological Measurement.* Vol.1. No.3 Summer, pp.385-401.

Schönberg, Uta and Johannes Ludsteck. 2014. “Expansions in Maternity Leave Coverage and Mothers’ Labor Market Outcomes after Childbirth.” *Journal of Labor Economics*, Vol.32, No.3, pp. 469-505

Social Security Council. 2008. “Gakudohoiku no genjyo to kadai, Watashitati no negai”

Dai 11 kai Syakaihosyo singikai Syosikataisaku tokubetsubukai siryo (“Current situation and problems of school childcare-Our wishes” the Document of the 11th Social Security Council Special Committee on Declining Birthrate.)

https://www.mhlw.go.jp/shingi/2008/09/dl/s0918-11d.pdf (in Japanese)

Takao, Kato, Kawaguchi Daiji, and Owan Hideo. 2013. “Dynamics of the Gender Gap in the Workplace: An econometric case study of a large Japanese firm.” RIETI Discussion Paper Series 13-E-038

Tokyo, 2018. “Ninsyohoikusyo ni tsuite.” (About the criteria of nueseries affiliated by the Tokyo Government.) Burearu of Social Welfare and Public Health.

http://www.fukushihoken.metro.tokyo.jp/kodomo/hoiku/ninsyo/index.html (in Japanese)

Yomiuri. 2015. “Ryoritsu habamu “shoichi no kabe”.” ("First grade shock" to prevent work-life balance.) *YOMIURI ONLINE.* May 26th.

https://www.yomiuri.co.jp/feature/matome/20150527-OYT8T50035.html (in Japanese)

Zhou, Mushi. 2017. “Motherhood, Employment, and the Dynamics of Women’s Gender

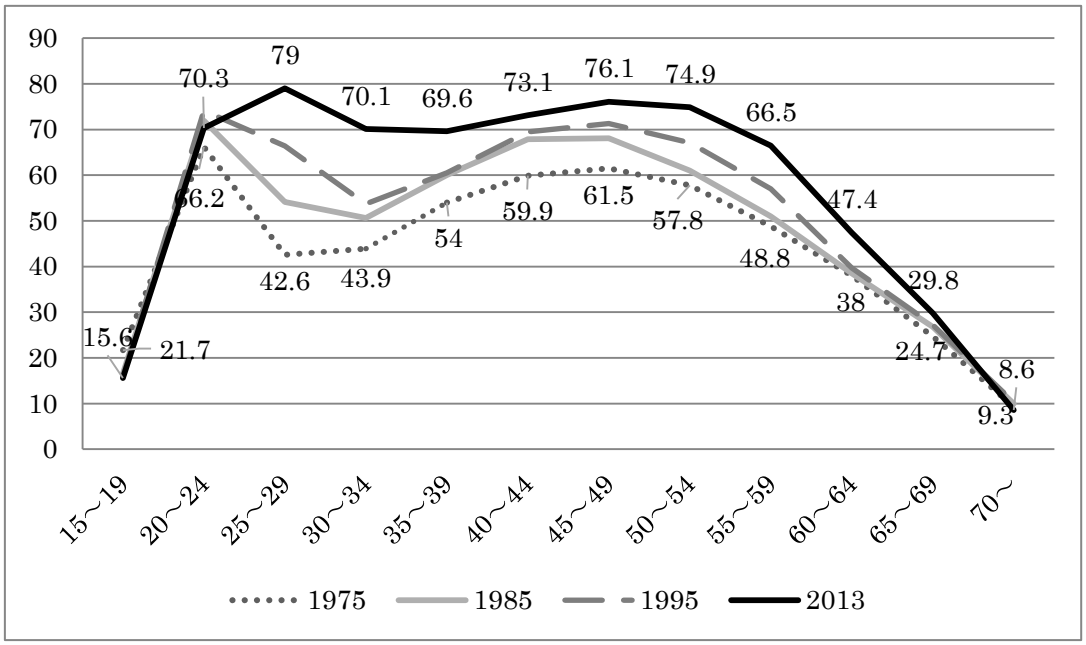
Attitudes.” *Gender and Society*. Vol.31, 6: pp. 751-776.

Zhou, Yenfei. 2016. “Syosikoreika ni okeru katei oyobi katei wo torimaku syakai ni kansuru keizeibunseki” (Poverty of households with house wives: its actual condition and factors) RIETI Discussion Paper Series 15-J-034.

Zhou, Yenfei and Oishi Akiko. 2003. “Hoiku sabisu no senzaij yuyo to kinko kakaku” ("Potential Demand and Equilibrium Price of Childcare Service".) *Quarterly Household Economic Research*. Autumn. No.60, 57-68. (in Japanese)

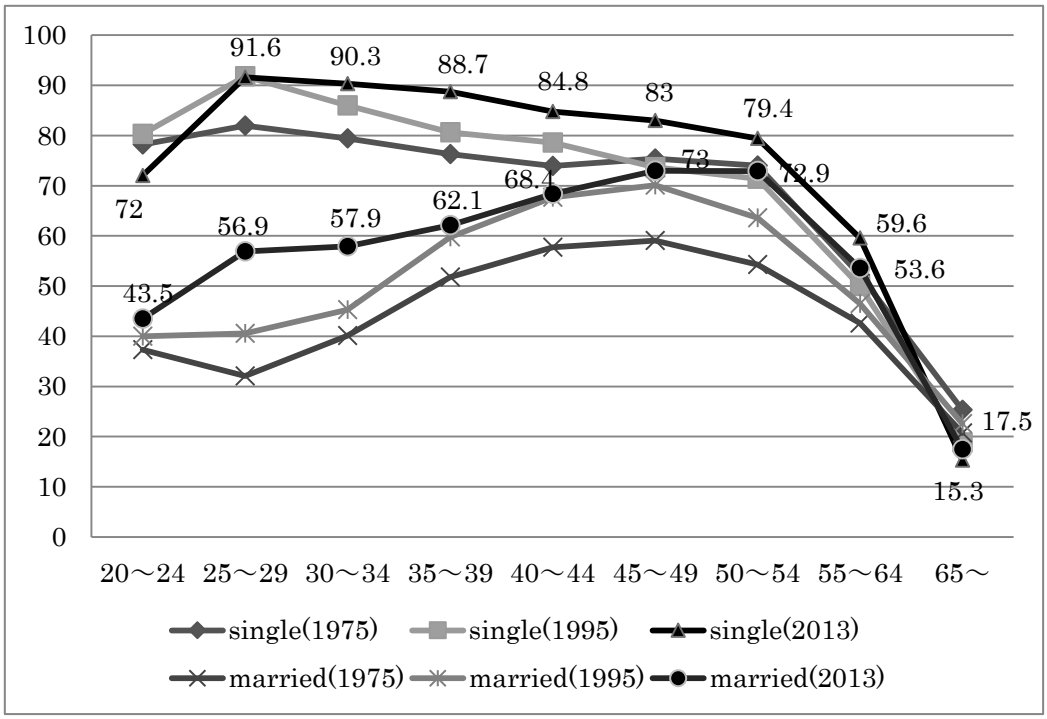
Figures and Tables

Fig. 1 Table Trends in women's labor force ratio by age group



Source：White paper on gender equality in 2014 (Cabinet Office 2015)

Fig. 2 Trends in female labor force ratio by marital status and age group



Source：White paper on gender equality in 2014 (Cabinet Office 2015)

Table 1 Descriptive Statistics

Mothers	with preschool child		with elementary school child	
Variable	Mean	Std. Dev.	Mean	Std. Dev.
Labor Market Participation	0.649	0.477	0.765	0.424
Working part-time*	0.317	0.466	0.417	0.493
Working in an irregular schedule*	0.146	0.354	0.147	0.354
Strict discipline	0.466	0.499	0.519	0.500
Concern (characteristics and habits)	0.439	0.496	0.442	0.497
Concern (study)	0.226	0.419	0.457	0.498
Concern (bullying)	0.067	0.251	0.097	0.296
WLC (too tired to do housework)	0.457	0.498	0.553	0.497
WLC (working too long to do housework and child care)	0.346	0.476	0.403	0.491
Depression (CES-D scale)	0.077	0.267	0.101	0.301
Shared housework by husband	0.289	1.006	0.008	0.976
Mother's age	35.2	5.652	39.5	5.396
Sex of the first child	0.477	0.500	0.489	0.500
Sex of the youngest child	0.467	0.499	0.500	0.500
Years of mother’s education	13.096	1.919	12.929	1.791
Wage of husband (yen)	344,2810	295,0290	322,0730	358,4030
Living together or closer to parents(in-law)	0.459	0.498	0.486	0.500
Childcare support from parents(in-law)	0.539	0.499	0.438	0.496
Financial support from parents(in-law)	0.197	0.398	0.176	0.381
N	1,378		1,782	

Note: These statistics are calculated out of all mothers, including mothers not in the labor force.

Table 2 First-grade Shock and a Mother's Labor Market Participation

Child	A. Labor Market Participation					
	First child			Youngest child		
	1	2	3	4	5	6
First-grade shock	0.155**	0.105	0.100	0.359***	0.276***	0.301***
	(0.0721)	(0.0796)	(0.0816)	(0.0505)	(0.0556)	(0.0550)
Wage of husband		-3.49***	-0.341***		-2.88***	-2.76***
		(0.544)	(0.568)		(0.409)	(0.427)
Living with or close to parents			0.0857***			0.0818***
			(0.0293)			(0.0244)
Childcare support from parents			0.0826***			0.102***
			(0.0291)			(0.0238)
Financial aid from parents			-0.143***			-0.140***
			(0.0350)			(0.0299)
N	1,900	1,555	1,471	2,489	2,043	1,938
R-squared	0.125	0.200	0.226	0.128	0.184	0.212

Child	B. Type of Work					
	Working part-time			Working in an irregular schedule		
	Youngest child			Youngest child		
	1	2	3	4	5	6
First-grade shock	0.295***	0.274***	0.244***	0.0260	0.0233	0.0407
	(0.0551)	(0.0632)	(0.0656)	(0.0560)	(0.0549)	(0.0573)
Wage of husband		-0.357	-0.317		-0.439	-0.432
		(0.349)	(0.365)		(0.366)	(0.391)
Living with or close to parents			-0.0384			0.0348
			(0.0258)			(0.0237)
Childcare support from parents			-0.0374			-0.00300
			(0.0241)			(0.0238)
Financial aid from parents			-0.0118			0.0392
			(0.0294)			(0.0330)
N	2,486	2,041	1,936	1,827	1,519	1,433
R-squared	0.127	0.159	0.167	0.114	0.135	0.136

Note: Standard errors are in parentheses and clustered within the 175-census block. The set of control variables includes year of survey, child's cohort fixed effects, gender of child, mother's age and years of education. The sample is restricted to all mothers with children below grade 6. * $p < .1$, ** $p < .05$, *** $p < .01$.

Table 3 Extended Analyses of First-grade Shock on a Mother's Labor Market Participation

	A. Labor Market Participation					
Child	First child			Youngest child		
	1	2	3	4	5	6
1st grade	0.0839	0.0219	-0.0117	0.232***	0.168***	0.178***
	(0.0728)	(0.0842)	(0.0869)	(0.0545)	(0.0596)	(0.0585)
2nd grade	-0.0389	-0.0246	-0.0100	-0.00984	0.00931	0.0276
	(0.0586)	(0.0604)	(0.0655)	(0.0439)	(0.0483)	(0.0477)
3rd grade	0.0650	0.0727	0.0747	0.0494	0.0421	0.0325
	(0.0524)	(0.0552)	(0.0574)	(0.0455)	(0.0486)	(0.0497)
4th grade	-0.00663	-0.00362	0.00895	-0.0350	-0.0426	-0.0376
	(0.0467)	(0.0513)	(0.0530)	(0.0482)	(0.0490)	(0.0506)
5th grade	0.0374	0.00891	0.0148	0.0416	0.0513	0.0596
	(0.0447)	(0.0499)	(0.0523)	(0.0437)	(0.0429)	(0.0447)
6th grade	0.0141	0.0292	0.0234	0.0806**	0.0482	0.0403
	(0.0431)	(0.0471)	(0.0503)	(0.0397)	(0.0410)	(0.0427)
Controls A		Y	Y		Y	Y
Controls B			Y			Y
N	1,900	1,555	1,471	2,489	2,043	1,938
R-squared	0.125	0.200	0.226	0.128	0.184	0.212
	B. Type of Work					
	Working part-time			Working in an irregular schedule		
Child	First child			Youngest child		
	1	2	3	1	2	3
1st grade	0.247***	0.203***	0.187***	-0.00825	0.0222	0.0289
	(0.0557)	(0.0627)	(0.0642)	(0.0549)	(0.0550)	(0.0555)
2nd grade	0.0349	0.0750	0.0889	-0.0232	-0.0411	-0.0277
	(0.0504)	(0.0577)	(0.0599)	(0.0373)	(0.0430)	(0.0435)
3rd grade	-0.0367	-0.0623	-0.0711	0.0301	0.0538	0.0310
	(0.0527)	(0.0594)	(0.0598)	(0.0413)	(0.0464)	(0.0454)
4th grade	0.00834	0.0217	0.00856	-0.000752	-0.0353	-0.0263
	(0.0611)	(0.0705)	(0.0720)	(0.0458)	(0.0507)	(0.0487)
5th grade	0.0268	0.0192	0.0250	0.0139	0.0252	0.0294
	(0.0588)	(0.0647)	(0.0676)	(0.0483)	(0.0523)	(0.0533)
6th grade	0.0144	0.0169	0.00579	0.0143	-0.00136	0.00533
	(0.0481)	(0.0567)	(0.0595)	(0.0437)	(0.0491)	(0.0513)
Controls A		Y	Y		Y	Y
Controls B			Y			Y
N	2,486	2,041	1,936	1,827	1,519	1,433
R-squared	0.127	0.159	0.167	0.114	0.135	0.136

Note: All regressions control for year of survey and child's birth cohort. Control A includes gender of child, husband's wage, mother's age and education. Control B includes proximity to parents(in-law), informal childcare support, and financial support from parents(in-law). * $p < .1$, ** $p < .05$, *** $p < .01$.

Table 4 Depression, Share of housework by husband and Work-life conflict

Child	Depression		Share of housework by husband		Too tired to do housework		Working too long to do housework	
	Youngest child							
	1	2	3	4	5	6	7	8
First-grade shock	0.118***	0.0764**	-0.633***	-0.409***	0.286***	0.255***	0.197***	0.196***
	(0.0336)	(0.0384)	(0.114)	(0.122)	(0.0563)	(0.0658)	(0.0585)	(0.0630)
Wage of husband		-0.914***		9.96***		-2.94***		-2.97***
		(0.209)		(1.13)		(0.43)		(0.366)
Living with or close to parents		-0.0111		-0.0739		0.0110		0.0456*
		(0.0173)		(0.0486)		(0.0242)		(0.0250)
Childcare support from parents		-0.0486***		0.175***		0.115***		0.0876***
		(0.0183)		(0.0540)		(0.0249)		(0.0255)
Financial aid from parents		0.0120		-0.0547		-0.124***		-0.0898**
		(0.0196)		(0.0671)		(0.0346)		(0.0350)
N	2,321	1,965	2,441	1,917	2,542	1,966	2,542	1,966
R-squared	0.086	0.110	0.140	0.254	0.105	0.180	0.084	0.148

Note: See the note for Table 2. For dependent variables, we employed seven out of twenty CES-D (Center for Epidemiologic Studies Depression Scale) measures for the scoring of distress level. Then, we used a cut-off score 20, which is higher than the 26 provided by CES-D, to construct a depression indicator. The perception of the share of housework by the husband is normalized.

Table 5 Extended Analyses of a Mother's Emotional Distress

	Depression	Share of housework by husband	Too tired to do housework	Working too long to do housework
	1	2	3	4
1st grade	0.105***	-0.217*	0.126*	0.153**
	(0.0387)	(0.114)	(0.0671)	(0.0635)
2nd grade	-0.0386	-0.135	0.0408	-0.0382
	(0.0437)	(0.107)	(0.0606)	(0.0576)
3rd grade	-0.00967	0.0264	0.0978*	0.0510
	(0.0417)	(0.127)	(0.0556)	(0.0550)
4th grade	-0.0278	-0.168	-0.145***	-0.0187
	(0.0402)	(0.128)	(0.0527)	(0.0541)
5th grade	0.0194	0.000842	0.0338	-0.0798*
	(0.0402)	(0.109)	(0.0534)	(0.0480)
6th grade	0.0281	0.0836	0.102*	0.128**
	(0.0422)	(0.111)	(0.0571)	(0.0575)
N	1,871	1,917	1,966	1,966
R-squared	0.116	0.254	0.180	0.148

See the note for Table 4.

Table 6 Extended Analyses of First-grade Shock and a Mother's Concerns and Discipline

	Strict discipline		Characteristics or habits		Study		Being bullied	
Child	F	Y	F	Y	F	Y	F	Y
	1	2	3	4	5	6	7	8
1st grade	0.212**	0.0842	0.158*	0.0129	0.0951	0.139**	0.0616**	0.0674*
	(0.0938)	(0.0627)	(0.0873)	(0.0626)	(0.0653)	(0.0574)	(0.0292)	(0.0352)
2nd grade	0.0439	0.0316	0.0850	0.108*	0.0609	0.0680	0.0369	-0.0152
	(0.0611)	(0.0615)	(0.0662)	(0.0636)	(0.0611)	(0.0592)	(0.0379)	(0.0381)
3rd grade	-0.0478	-0.0917	-0.0398	-0.145**	0.0655	-0.0296	-0.0259	-0.0178
	(0.0675)	(0.0628)	(0.0664)	(0.0589)	(0.0653)	(0.0571)	(0.0403)	(0.0336)
4th grade	0.0603	0.110*	-0.0650	0.0324	0.0950	-0.0106	0.0128	0.0238
	(0.0707)	(0.0611)	(0.0623)	(0.0578)	(0.0669)	(0.0576)	(0.0409)	(0.0339)
5th grade	-0.0264	0.00806	0.0354	-0.0229	-0.00805	-0.0233	0.00349	-0.00943
	(0.0662)	(0.0614)	(0.0603)	(0.0567)	(0.0587)	(0.0599)	(0.0412)	(0.0362)
6th grade	0.00699	-0.108*	-0.0705	-0.00939	0.101*	0.105*	-0.00246	-0.0198
	(0.0677)	(0.0605)	(0.0548)	(0.0549)	(0.0596)	(0.0622)	(0.0385)	(0.0332)
Observations	1,485	1,952	1,496	1,966	1,496	1,966	1,496	1,966
R-squared	0.146	0.095	0.148	0.100	0.236	0.170	0.146	0.108

Note: See the note for Table 4. Child "F" indicates first-grade shock in the case of a first child, and "Y" indicates first-grade shock in the case of the youngest child.

Appendix

Table A: definitions of variables

Variables	Definition
Working now	Do you work for an income now? 1 if answering "working"
Part-timer	What is your working status? 1 if answering "contract employee", "dispatched temporary", "part-timer", "day hire"
Working schedule	Do you work regularly? 1 if answering "regularly", "mostly regularly"
Not working (working hours do not match)	Why are you currently not working? 1 if answering "no job satisfying conditions of working hours"
Concern (characteristics and habits)	Do you have any concerns about raising children? (characteristics and habits) 1 if answering "yes"
Concern (study)	Do you have any concerns about raising children (study) 1 if answering "yes"
Concern (bullying)	Do you have any concerns about raising children (bullying) 1 if answering "yes"
Strict discipline	Do you think that the discipline against children at home is tough overall? 1 if answering "Very tough", "Somewhat tough"
WLC (too tired to do housework)	How often have you been "too tired to do housework" 1 if answering "Almost every day", "sometimes during the week", "sometimes during the month"
WLC (working too long to do housework and child care)	How often have you been "working too long to do housework and childcare" 1 if answering "Almost every day", "sometimes during the week", "sometimes during the month"
depression	CES-D (Center for Epidemiologic Studies Depression Scale) index 1 if depressed
Housework ratio of husband	How much does your husband share housework, including childcare; please write from 0, if doing nothing, to 10, if doing it all. Normalized with mean 0 and standard deviation 1
Mother's age	Mother's age
Years of mothers' education	What is your education level? 9 if answering "junior high school", 12 if answering "high school", 14 if answering "2-year college", and 16 if answering "4-year university or higher"
Wage of husband	Write down your husband's income. Use real numbers added and put 0 if answering "single mother"
Living together or closer to parents(in-law)	Do you live with your parents(in-law)? 1 if answering "living with", "living on the same premises", "living within walking distance"
Childcare support from parents(in-law)	How often do you receive housekeeping and parenting support from your parents(in-law)? 1 if answering "More than twice a month" and "About once a month"
Financial support from parents(in-law)	How often do you receive financial support from your parents(in-law)? 1 if answering "More than twice a month" and "About once a month"
Treatment	1 if the child of the respondent entered elementary school in 2014
Grade cohorts	Birth year
Year of survey	Year of survey